

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/23788⁴ —

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C 07C 69/76, 61/00, 51/16

US CL : 560/008; 562/400, 405

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 560/008; 562/400, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
STN REGISTRY, CAPLUS, WEST, EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CA 2002:487541 (BESWICK et al) 27 June 2002 (27.06.2002), see the entire abstract.	1 in part, 3 in part, 22 in part, 24 in part, 46 in part.
X	CA 2002:964313 (BROOKS et al) 19 December 2002 (19.12.2002), see the entire abstract.	1 in part, 3 in part, 22 in part, 24 in part, 44 in part, 46 in part.
X	CA 1999:184126, (TAJIMA et al) 11 March 1999 (11.03.1999), see the entire abstract.	1 in part, 3 in part, 10-11 in part, 14-19 in part, 22 in part, 24 in part, 31-32 in part, 35-40 in part, 44 in part, 46 in part, 53-54 in part, 57-62 in part



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"B" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search

18 March 2005 (18.03.2005)

Date of mailing of the international search report

04 NOV 2005
Authorized officer

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Box No. II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 43
because they relate to subject matter not required to be searched by this Authority, namely:
in claim 43, although numbered as a claim, there is no subject matter being claim.
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such
an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all
searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite
payment of any additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report
covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is
restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-42 in part and 44-64 in part

- Remark on Protest
- | | |
|--------------------------|--|
| <input type="checkbox"/> | The additional search fees were accompanied by the applicant's protest and, where applicable, the
payment of a protest fee. |
| <input type="checkbox"/> | The additional search fees were accompanied by the applicant's protest but the applicable protest fee
was not paid within the time limit specified in the invitation. |
| <input type="checkbox"/> | No protest accompanied the payment of additional search fees. |

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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable X is methylene, the variable Y is oxygen and none of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group II, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable X is methylene, the variable Y is oxygen and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group III, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable X is methylene, the variable Y is sulfur and none of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group VI, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable X is methylene, the variable Y is sulfur and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group V, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable X is methylene, the variable Y is NR18 and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group VI, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable X is methylene, the variable Y is NR18 and none of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group VII, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable Y is methylene, the variable X is oxygen and none of the variables R1-R6 and R13 and R14 is not a heterocyclic moiety.

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Group VII, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable Y is methylene, the variable X is oxygen and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group XI, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable Y is methylene, the variable X is sulfur and none of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group X, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable Y is methylene, the variable X is sulfur and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group XI, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable Y is methylene, the variable X is NR18 and none of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group XII, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variable Y is methylene, the variable X is NR18 and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group XIII, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variables X and Y are not methylene, and none of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

Group XVI, claims 1-42 in part and 44-64 in part, drawn to compounds, pharmaceutical composition comprising the same and methods of using the same wherein the variables X and Y are not methylene and at least one of the variables R1-R6 and R13 and R14 is a heterocyclic moiety.

The inventions listed as Groups I-XIV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:
In a Markush practice, wherein a single claim defines alternatives (chemical or nonchemicals) is governed by Rule 13.2, thus the requirement of a special technical feature are defined by:

- (a) All alternatives have a common property or activity AND
- (b)(1) a common structure is present, for instance a significant structural element is shared by all of the alternatives OR
- (b)(2) in cases where the common structure cannot be the unifying criteria all the alternatives belong to a recognized class of compounds to which the invention pertains.

The phrase "significant structural element" as refers above should constitutes a structurally distinctive portion of their structure in view of the prior art. In the instant case, compounds embraced by claims 1-21 do not share a common structure in view of the prior art because the common core of the instant claims, a benzene ring is already disclosed in the prior art in multiple references, see for instance Caplus accession number 1916:15613 abstract for Reverdin et al, Archives des Sciences Physiques et Naturelles (1916), 42, 47-53. Reverdin discloses 2,6-dinitro-N-phenyl benzylamine, having a registry number 744239-58-5. See also Aldrich, Handbook of Fine Chemicals and Laboratory Equipment, 2000-2001, page 178 disclosing 2-(benzyloxy)phenol, registry number 6272-38-4; 4-(benzyloxy)phenol, registry number 1103-16-2 and page 179, disclosing benzyl phenyl sulfide, having registry number 831-91-4 and benzyl phenyl ether, having a registry number 946-80-5. All the cited compounds are disclosed by the prior art and all of them contain a benzene ring and even more they embraced the definition of having two benzene rings connected by the same variables groups X, Y as defined by claim 1.

Therefore compounds embraced by claims 1-21 are not link by a special technical feature because they do not share a common core that can be considered as part of Applicant's contribution to the art.